and the *μονόκερως*, no living representatives of any of which animals can be supposed to have any existence in nature*. Naturalists are, we believe, agreed upon the point that the so-called Unicorn is a fabulous animal from beginning to end. It has merely been my object in this paper to show how utterly groundless is the foundation on which the whole superstructure rests. We cannot, therefore, participate in the slightest degree in the hope that Dr. Baikie will be more successful than his predecessors.

BIBLIOGRAPHICAL NOTICES.

Naturhistorisk Tidsskrift (Journal of Natural History), founded by Dr. H. KRÖYER*; edited by* Prof. T. C. SCHJÖDTE *at Copenhagen.* Third Series, 1861. [Kröyer, *Contributions to the History of* Mysidæ; Meinert, *Anatomy of the Larva of* Gastrus Equi; Didrichsen, *Botanical Observations;* Schjödte, *Danish* Harpalini, and *Larvæ of Coleoptera*, &c.]

THE 'Naturhistorisk Tidsskrift,' or 'Journal of Natural History,' founded by Dr. Kröyer of Copenhagen, which, from 1837 to 1849, formed one of the principal means of literary communication for Danish naturalists, will be remembered by all those who occupy themselves with the fauna and flora of the North. The editor communicated through this channel a great many of his numerous and valuable contributions to the natural history of Crustacea and Fishes; but in 1849 he was forced by different circumstances to discontinue the journal, six substantial volumes having at that time been published. Travels and declining health afterwards prevented Dr. Kröyer from resuming the publication, which has thus been interrupted for twelve years. At present, however, Professor Schjödte, whose name as an entomologist is also well known in England, has undertaken the task of continuing the journal; and the first part of the third series appeared a twelvemonth ago. That it is an undertaking deserving the attention of English naturalists will appear from a review of the volume before us. It is a matter of course that the majority of the papers will always be in Danish; but the affinity of this language to the English is so great, that any person may easily acquire sufficient Danish for consulting scientific treatises in that language. Besides, the diagnoses and explanations of the plates are given in Latin; this is, at least, the case in the first part of the work, on which we will offer a few remarks.

It is headed by a paper from the pen of Dr. Kröyer, containing descriptions of several species of *Mysidæ* and similar Crustacea. Dr. Kröyer was one of the naturalists who accompanied the great expedition of 'La Recherche' to the Arctic regions, in 1838–1840, of which the results are embodied in Paul Gaimard's 'Voyages de la Commission du Nord en Scandinavie, Laponie,' &c.; but although several plates have been published containing drawings and analyses of the animals collected, no text has hitherto appeared. This deficiency, the reasons of which Dr. Kröyer promises to explain on a subsequent occasion, he now intends to remedy to some extent; and the treatise before us must in some degree be looked upon as a step in that direction. The descriptions, which in accuracy leave nothing to be desired, are in Danish; but the very full diagnoses, as well as the explanations of the plates, are in Latin. To these we can therefore refer, contenting ourselves with a few general remarks.

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* Pliny (N. H. viii. 21) says that "there are in India oxen with solid hoofs and a single horn." So here we have another kind of Unicorn.

In Milne-Edwards's 'Histoire Naturelle des Crustacés' only five species of *Mysidæ* are described, of which three belong to the northern seas—viz. *Mysis spinulosa*, Leach, *M. Chamæleon*, Thompson, and *M. vulgaris*, Thompson. The number of northern species is, however, much greater, as Dr. Kröyer enumerates seven Scandinavian species, amongst which the *M. spinulosa*, Leach, is probably not included. Three of these seven species are exclusively Arctic, viz. *M. oculata*, Fabr., *M. arctica*, Kr., and *M. latitans*, Kr.; the others are found along the shores of Norway, Sweden, and Denmark, from Throndhjem to the Sound. *M. flexuosa*, Müller, besides, penetrates as far into the Baltic as Gotland. *M. inermis*, Rathke, and *M. cornuta*, Kr., reach into the Arctic seas, but not into the Baltic, whilst *M. vulgaris*, Thompson, is principally found in the fjords of Jutland and in the Sound. The *M. oculata* was first described by Fabricius in his 'Fauna Grœnlandica,' and afterwards by Leach, as *M. Fabricii*. It is the commonest species in the Arctic seas, and the principal food of whales and sea-birds at different seasons. To this species tab. 8. fig. 2 *a–r*, in Gaimard's 'Voyages,' &c., has reference. *M. latitans*, Kr., is a new species, found together with the *M. oculata*, which it much resembles. The *M. latitans*, is, however, smaller and more slender. *M. arctica* seems to be a rare and very remarkable form, having the dorsal shield very large, covering all the joints of the cephalothorax, and divided by a remarkable, deep transversal groove into two parts; the frontal rostrum is also unusually distinct, though short. *M. flexuosa*, Müller (Prodromus Zoologiæ Daniæ, 1776), is the species of *Mysis* which has been earliest described with sufficient distinctness to be recognized; and Müller's name must therefore supersede the Thompsonian *M. Chamæleon*. Dr. Kröyer leaves it undecided whether Thompson's *M. Leachii* and Leach's *M. spinulosa* also refer to this species. To *M. flexuosa* belong figs. 1, 2, & 3 on tab. 9 in Gaimard's work. On page 44 in the 'Tidsskrift,' will be found a table (in Latin) for the determination of the species of *Mysis* mentioned in Dr. Kröyer's paper.

The author next describes a new *Cynthia* from the Atlantic, which he proposes to call *inermis*, and which is distinguished from *C. armata*, M.-E., by the shortness of the frontal rostrum, and from *C. Thompsonii*, M.-E., by a number of less conspicuous but not less significant marks. Another species shows sufficient peculiarity of structure to warrant the establishment of a new genus (*Anchialus*, Kr.), distinguishable from *Mysis* principally by the shape of the dorsal shield and by the second pair of foot-jaws terminating in organs of prehension formed by the last three joints: the *only* species is called *typicus*. Then follow the descriptions of *Promysis Galateæ*, Kr., from the Indian Sea, and of *Dymas typus*, Kr., a new genus belonging to Dana's subfamily *Sceletinæ*, and forming an intermediary link between *Mysis* and *Myto*. *Myto Gaimardi*, Kr., was also discovered during the voyage of 'La Recherche,' and described in the second series of the 'Tidsskrift,' vol. i. pp. 470–476; a figure and analyses are found in the 'Voyages,' &c., tab. 7. fig. 1 *a–g*. Dr. Kröyer gives in the present volume (p. 63) a Latin explanation of the said figure. The other new genera and species are illustrated by two plates closely filled with analytical drawings, with a Latin explanation, a table of measurements being also appended. A continuation of these carcinological contributions may be expected in the following parts of the periodical.

The history of the larva of *Gastrus Equi* has been the subject of several treatises by different authors, of which doubtless the most remarkable is one by Schroeder van der Kolk, the celebrated Dutch anatomist. The investigations on which this treatise was founded were partly undertaken before 1830, when some of the drawings were exhibited at a meeting of naturalists in Heidelberg; but the paper was not published till 1845. It was written in French, and appears in the eleventh volume of the 'Nieuwe Verhandelingen der eerste Klasse van het koninklijk-nederlandsche Institut.' Nevertheless this remarkable paper seems to be very little known; and in the most current handbooks there is no mention of it, not even in the author's countryman Van der Hoeven's well-known 'Manual of Zoology.' This oblivion is highly undeserved; and the only circumstance that perhaps in some degree may explain it is that, along with his excellent account of the anatomy of the said larva, Schroeder van der Kolk proposes certain theories concerning the use of the organs he so ably describes which could not but seem suspicious to his contemporaries, and which also in part have turned out to be fallacious. The volume of the Danish 'Tidsskrift' which we are reviewing contains, in a paper by Mr. Meinert, several valuable contributions to our knowledge of this interesting animal, in the shape of a criticism of Schroeder van der Kolk's statements as to the organs of respiration, digestion, and circulation.

The respiratory system consists, as is generally the case with the larvæ of dipterous insects, of a cavity near the posterior end of the animal, from which several tracheæ issue, two being larger than the others, and reaching (one on either side) to the vicinity of the head. In the larva of *Gastrus Equi* the anterior ends of these two long tracheæ are horny, and show a great number of perforations. They are attached to the inner extremity of two short tubes, which correspond to openings in the skin, and through which the tracheæ may be either brought to a level with the general surface of the body or drawn back, and thus protected from injury. Schroeder van der

Kolk has overlooked this remarkable structure, and supposes the tracheæ to end blindly, simply attached by their ends to the inner surface of the skin. According to him, the air in the respiratory organs is renewed through an opening in the middle of a horny plate closing the great aëriferous cavity, at the posterior extremity of the body from behind. Schroeder van der Kolk even assumes the existence of a sphincter around this supposed opening. Mr. Meinert shows that this is a mistake: in the place of the supposed perforation there is merely a pellucid spot, and an impression on the horny plate, caused by the existence in young larvæ of a small gland on this spot, which is obliterated in the adult larvæ. A communication between the air enclosed in the aëriferous chamber and the outer air, through the horny plate closing it from behind, is possible only in so far as it is permitted by the structure of the said plate itself, which consists of a not very close texture of chitinous filaments, externally covered by a firm but thin membrane. When this plate is viewed from behind, it presents six slits of a curved shape, forming concentrical lines, three on each side of the pellucid point in the middle. Each of these slits opens directly into a double row of vesicles containing air. Schroeder van der Kolk supposed these slits to be closed by a very thin membrane, the whole structure representing a kind of trachea-gills; but Mr. Meinert has shown that they are perfectly open, the air being detained in them by their margins being finely denticulated. The number of these slits varies according to the age of the larvæ.

According to Schroeder van der Kolk, the alimentary tube is connected with the adipose tissue in such a manner that the nutritious fluid may directly flow from one into the other. Mr. Meinert shows that the foremost set of connecting tubes, according to Schroeder van der Kolk, are in reality mere ligaments, and that, as regards the second set of such tubes assumed by Schroeder van der Kolk, this anatomist has been misled by the circumstance that the longer pair of the Malpighian vessels, in the larva of *Gastrus Equi*, as well as in many other insects, presents a different structure in their anterior and their posterior parts. Their extreme ends are, as usual, fixed to the posterior parts of the intestine, but do not, as Schroeder van der Kolk thought, open into it; and although the said vessels are fixed to the adipose tissue at that point where their two different structures meet, there is no communication between their cavity and the adipose vesicles. With respect to the dorsal vessel, Schroeder van der Kolk has also fallen into a serious mistake, namely, in considering certain lateral ligaments, which keep the vessel in its place, as a kind of aortas. Although Mr. Meinert has thus divested Schroeder van der Kolk's treatise of much that appeared as its most striking results, there is so much left to admire in it that naturalists will not be justified in disregarding it for the future, as has hitherto been the case.

The aim of Mr. Didrichsen's paper, to which we would next direct attention, is to correct certain mistakes concerning the nature of the thorns in *Berberis*, *Ribes*, and *Parkinsonia*, which seem in a great measure to pervade botanical literature; and also to free the great

Linnæus from the imputation of having but imperfectly distinguished between *spina* and *aculeus*. These errors have arisen from the circumstance that, in his 'Philosophia Botanica,' page 50, *Berberis* is mentioned, together with *Ribes*, *Rubus*, and *Rosa*, as having *aculei*; and on page 110, *Parkinsonia* is instanced, with other leguminous plants, as showing examples of aculei, although the thorns in these plants must be considered as spinæ, according to Linnæus's own definition in page 50. The only mistake of Linnæus is, according to Mr. Didrichsen's view, that *Berberis* has been mentioned (page 50) amongst the examples of aculeus—a circumstance which is easily explained when we remember that, when this part of the 'Philosophia Botanica' was written, Linnæus was slowly recovering from a dangerous illness, as he states himself in the preface, and, while confined to his bed, dictated this immortal work to one of his friends, as fast as the printer could put it in type. Both at an earlier time, in the 'Hortus Cliffortianus' (1737), and afterwards, in the 'Species Plantarum' (ed. 2. p. 472, 1762), he described the thorns of *Berberis* as *spinæ*. Whilst some over-zealous admirers of Linnæus have tried to defend the excusable, but undeniable, error committed in p. 50 in the 'Philosophia Botanica,' others, misguided by a superficial similarity between the thorns of *Berberis* and those of *Ribes*, have maintained that the thorns of *Ribes* had also been erroneously mentioned among the examples of aculei. Others, again, have entirely discarded Linnæus's definitions, and attempted to find some new marks of distinction between *aculeus* and *spina*, derived from their position, the constancy of their occurrence, and their development during the growth of the plant. Mr. Didrichsen fully concurs with those who reserve the name of *spinæ* for such thorns as are only transformations of the ordinary organs or parts of the plants, but describe as *aculei* all thorns which are merely corticular appendages. But at the same time he shows that Linnæus's definition in page 50 of the 'Philosophia Botanica' does in reality come to the same, and is the only practically useful one. He shows that the difficulty which DeCandolle thought to find in reference to the Monocotyledons does not really exist, and that the investigations as to the development of the thorns in *Ribes Grossularia*, by which some German authors pretend to prove these to be spinæ, are altogether unreliable. Nay, Mr. Didrichsen even goes a step further. It is commonly supposed that what are now called morphology or morphological points of view were quite foreign to the mind of Linnæus, and that he only took what we should call a terminological view of questions like the one before us. But Mr. Didrichsen maintains that this was not the case. Linnæus was the founder of botany as a science, and he was well aware that the first thing necessary was to create a fixed terminology; but it needs little explanation to show that for this purpose definitions like those of *spina* and *aculeus* in p. 50 of the 'Philosophia Botanica' were vastly preferable to definitions founded on morphological considerations. Linnæus's description of *Berberis* in the 'Species Plantarum' (ed. 2. p. 470), in which he says, "folia in spinas tripartitas mutata," as well as other passages, show that he knew quite well the morphological difference between *spina* and *aculeus*; and his description of *Ribes Cynobasti* (*ibid.* p. 292), in which these words occur—"aculeus *instar* spinæ sub alis"—shows that he was well aware that the aculeus of the said plant might at a first glance be taken for a spina *on account of its place.* That wide field of research which was opened up by subsequent authors, urging the principles of morphology, was by no means hidden from Linnæus's master-mind; but he left others to do what he could not enter upon himself, if he wished to accomplish the general regeneration of natural history—a purpose so grand in itself that no scientific man has ever grappled with a greater. That the morphological difference between *aculeus* and *spina* was before the mind of Linnæus when he wrote the definitions in page 50 is, in the estimation of Mr. Didrichsen, confirmed by the circumstance that the same matter is treated of once more in a later chapter, but in a different manner. In this second place Linnæus seems really to have taken a purely terminological view of the matter, describing different kinds of thorns only just as they appeared to the eye. Here *aculeus* meant only a small, not very rigid thorn, whatever was its origin; and this fully explains the fact of *Robinia* and *Parkinsonia* being mentioned as instances, although Linnæus elsewhere acknowledged them to have spinæ. That *aculeus* does not mean the same in pages 50 and 110 of the 'Philosophia Botanica,' might have been concluded from the simple fact that he calls his species of *Parkinsonia* "*aculeata*," although he describes it as having spinæ. In naming the species, he took a purely terminological external view; but in describing it, he did not overlook the morphological nature of its thorns. (It is by a mistake that Künth mentions this plant as *P. spinosa*, Linn.)

Prof. Schjödte's paper on the Danish *Harpalini* has a double interest, namely, partly on account of the information afforded on the geographical distribution of certain species, and on the general character of the Danish fauna, and partly on account of the systematical observations by which it is headed. Of *Harpalini*, the Danish fauna numbers no less than forty-six species, and presents the peculiarity that, besides the species occurring in other countries under the same latitudes, not a few species are found in Denmark which are characteristic of far more southern parts of Europe. This is the case with *Anisodactylus signatus* and *nemorivagus; Harpalus distinguendus, fuscipalpis, honestus; Stenolophus melanocephalus* (=*S. Skrimshiranus*), *vespertinus*, and *elegans*. None of these are found either in Norway, Sweden, or North Germany. *Diachromus germanus, Ophonus punctatulus*, and *Stenolophus anglicus* *, reach Denmark through North Germany, but are not found north of the Baltic and the Kattegat. On the other hand, *Bradycellus cognatus* (Greenland, Norway, North of Sweden) is an instance of a very northerly species which is still commonly found in Denmark, but not further to the south; whilst *H. ferrugineus* is a species peculiar to the east of Europe, which is still found, though very rarely, in Denmark and at the Rhine, but not in England. In "Möens klint," and the neighbourhood of Silkeborg in Jutland, several species are found which elsewhere are confined to mountains, although the said localities are only 400–600 feet above the surface of the sea: amongst the *Harpalini,* this is the case with *Ophonus azureus* and *Harpalus seriepunctatus.*

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* Prof. Schjödte has adopted this name, which dates from 1766 (Voet, i. 67, tab. 35. fig. 18), as the Linnean *Carabus vaporariorum* cannot possibly be this species, and as Voet's name is so much older than Schrank's *C. teutonus*, which some have adopted in this country.

The species having all been described before, new descriptions are given only of a few. The characters, however, by which Prof. Schjödte proposes to arrange them into groups are indicated (in Latin); of the genera new and excellent descriptions are given, and a synoptical table at p. 153. The Danish *Harpalini* belong to *Anisodactylus, Diachromus, Ophonus, Harpalus, Bradycellus, Acupalpus, Stenolophus,* and *Balius,* a new genus founded on *Stenolophus conspectus* and a very similar species from Bengal, distinguished by the remarkable shape of the ligula*. Prof. Schjödte further proposes the establishment of a new group within the limits of the *Harpalini,* which he proposes to call *Stenolophini,* and characterizes by the structure of the maxillæ, of which the stipites are prolonged into a remarkable tooth reaching beyond the first joint of the maxillary palpi. In this group Prof. Schjödte comprises a series of small *Harpalini* "spread over the whole earth, and not less so in the scientific systems." Besides *Balius, Stenolophus,* and *Acupalpus,* he mentions *Daptus, Batoscelis,* and *Agonoderus.* Among these, *Daptus* and *Batoscelis* are adapted for a manner of living similar to that of the *Scaritini*; and many entomologists would probably place them near this group on account of their thick heads, broad anterior tibiæ, linear tarsi, &c. Prof. Schjödte, however, urges that these so-called "biological" characters do not indicate a real affinity between all the *Carabi* which exhibit them, but only an analogous mode of life. The structure of every animal is no doubt closely adapted to its habits; and in so far every peculiarity of structure, and the systematic characters derived from it, might, in some sense of the word, be called biological. But it is only to a small extent that we can indicate the connexion between habits of life and structure; and, as our knowledge stands at present, every animal and every group of animals appear to us as exhibiting the general feature of some type quite arbitrarily devised by the Creator, and modified in some respects to serve certain purposes. The true conception of these types, of higher and lower order, is the first condition of a natural system; but in this respect great faults have been committed. One great cause of mistakes is that analogous modifications of the corresponding organs in animals really belonging to different though allied types, but living under analogous external circumstances, have often been erroneously considered as the peculiar characteristics of a type—or, in other words, analogies have been mistaken for affinities. Thus, in the case before us, most *Carabi* adapted for digging in the ground undoubtedly belong to the same natural group—*Scaritini*; but this is not the case with all. Some genera also of other groups are adapted for this manner of living by the shape of their heads, their prothorax, antennæ, and legs, without on that account separating themselves from the group to which they naturally belong. *Daptus* and *Batoscelis* amongst *Stenolophini*, *Ditonus*, *Acinopus*, and others amongst the other *Harpalini*, are in this case. But then the whole set of characters which have reference to this manner of living cannot any longer be considered as the exclusive mark of distinction of any particular group.

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* What is called ligula in *Carabi, Dytisci,* and *Gyrini,* is, strictly speaking, only the fulcrum ligulæ, the true ligula being represented by the "paraglossæ."

Prof. Schjödte's paper is rich in hints towards a better systematic arrangement of this numerous family than the present one, amongst which we will only mention the peculiar structure of the mouth in *Amblystomus*, *Barysomus*, and *Cyclosomus*, whose paraglossæ, being very broad, unite in front of the ligula.

In connexion with the preceding, a few words may not be out of place with reference to Prof. Schjödte's other contributions to the history of the *Carabi*. Much valuable information on this subject is to be found in his 'Denmark's Eleutherata' *, a work which is much less known than it deserves to be. In the second volume of the second series of the 'Naturhistorisk Tidsskrift,' p. 346, there is an interesting treatise on two new *Carabi* from Guinea,—*Hiletus versutus*, which forms the type of a separate group, and *Ochyropus gigas*, which belongs to *Scaritini*, but is remarkable for its long legs and vigorous feet. To the description of these species the author adds a number of highly interesting remarks on the systematic value of certain structural modifications of the thorax, of the position and shape of the antennæ, as well as of the different modifications to which the neighbouring parts of the head are subject, corresponding to the peculiarities of the antennæ. In the 'Proceedings of the Royal Danish Society' for 1855, he reverts to the subject; and the principal results embodied in these papers may be shortly recapitulated in the following manner.

In all *Carabi* the principal part of the epimera metathoracica is covered by the elytra, and is therefore quite membranaceous; but in very many there is an appendix to the said pieces, which descends towards the haunches, and is visible on the ventral surface. These appendices coalesce more or less with the episterna metathoracica, and appear to a superficial observer as belonging to them; hence *Carabi* presenting this structure have formerly, both by Schjödte and others, been described as having episterna metathoracica appendiculata, although it ought to be epimera metathoracica appendiculata. It is by comparison with other Coleoptera where the epimera are less completely covered than in *Carabi*, that Prof. Schjödte has learned the real nature of these appendices. The existence or want of these pieces is of great systematic value. In the family *Carabini* it may be advantageously combined with the shape of the tibiæ anteriores. They are wanting in *Cicindelini, Carabini, Elaphrini, Scaritini**, and in the more isolated genera *Siagona* and *Enceladus*. Of these, *Scaritini* distinguish themselves from the others by having a deep incision on the outer edge of the two anterior tibiæ, of which one of the terminal spines of the tibiæ is removed. All the others have either no incision or only a small one, and both terminal spines in their proper place. *Hiletus*, Schjödte, combines this last character with the existence of appendices to the epimera metathoracica, whilst all the other *Carabi* which have not been here mentioned combine the existence of an incision in the two anterior tibiæ, carrying one of the terminal spines, with appendiculated epimera. Another point in the structure of the thorax has perhaps in some respects been observed, though not clearly expressed, by the American entomologist Leconte, namely, the formation of the sockets of the second pair of legs. Five pieces may participate in the formation of each of these sockets: 1, mesosternum; 2, metasternum; 3, episternum mesothoracicum; 4, epimerum mesothoracicum; and 5, episternum metathoracicum, of the corresponding side. There exist four combinations: the sockets are formed (1) by mesosternum and metasternum alone; (2) by mesosternum, metasternum, and episterna mesothoracica; (3) by mesosternum, metasternum, and epimera mesothoracica; (4) by mesosternum, metasternum, episterna, and epimera mesothoracica. In the third and fourth cases a small continuation from the episterna metathoracica sometimes takes part in the formation of the sockets. These four combinations may be represented as in the subjoined diagrams, the numbers indicating the pieces in the order they are mentioned above †.

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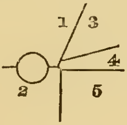
* Denmark's Eleutherata, I. (*Carabi*, *Dytisci*, *Gyrini*). Copenhagen, 1840–42. 25 tables, with analytical drawings.



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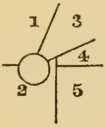

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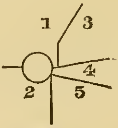

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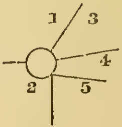

IV

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* In some *Scaritini* the epimera metathoracica present a linear impression near the margin, which may be, and has been, mistaken for a real suture; and the piece thus isolated has been mistaken for the appendices of which we speak.

† Proc. Royal Soc. of Copenhagen, 1855, p. 360. In this place, Prof. Schjödte has communicated various observations, *e. g.* on the new *Niphargus aquilex*, and on *Broscosoma* and *Miscodera*, which he shows are so nearly related that, instead of belonging to different groups of *Carabi*, as some think, they are both true *Harpalini*, and would form only one genus if there were not some difference in the construction of the chin and in the shape of the epimera mesothoracica, which are triangular in *Miscodera* and linear in *Broscosoma*. It is in so far as Leconte has attended to the shape of these pieces that he may be said to have been on the track of Prof. Schjödte's beautiful observation; but he has not penetrated the matter, and Prof. Schjödte avails himself of the opportunity to show how unnatural

For want of sufficient material, Prof. Schjödte has not carried out through all the families the systematical results to which a proper consideration of these characters would lead; he only indicates that the family of *Carabi* may thereby be divided into two natural divisions, and that throughout the order Coleoptera they are valuable as characters of families and groups. There can be no doubt that by this discovery a very important step has been made towards the better arrangement of the Coleoptera.

In the paper on *Hiletus* and *Ochyporus* (in the second series of the 'Tidsskrift,' p. 376), Prof. Schjödte has drawn attention to the differences exhibited by the *Carabi* as to the place of insertion of the antennæ and the corresponding modifications in the surrounding parts. The following are the principal variations. I. The antennæ may be inserted in the sides of the forehead over the mandibles. The basal joint (scapus) of the antennæ is then generally very long, and a little curved so as not to interfere with the eye when the antennæ are kept quite close to the body, which operation is also facilitated by the socket of the second joint (pedicella) being turned a little backwards. This is the case in *Cicindelini*, and forms a new mark of distinction for this group, which has since also been observed by Leconte. In *Collyris* and *Euprosopus*, each of the cheeks presents a sharp groove under the eye, for the reception of the third joint of the antennæ, which is shaped accordingly. In *Manticora* the basal joint is unusually short, and there is a groove for it closely behind the point of insertion of the antennæ. II. In all other *Carabi* the antennæ are inserted in the cheeks, between the root of the mandibles and the eye, almost every genus exhibiting a peculiar arrangement. In some (as, for instance, in *Anthia*) the cheeks extend so far in all directions that there are no obstructions to the free movements of the antennæ, in which cases therefore no special modifications of the surrounding parts are necessary. In other cases (e. g. *Mormolyce, Helluo, Galerita, Drypta*) the cheeks are so long, and at the same time so much extended to the sides, as to present an anterior surface outside the mandibles, in which the antennæ are inserted. If so, there is sometimes a groove in the mandibles, in order to facilitate the antennæ being turned forward, whilst the opposite movement is often facilitated by a deep groove prolonging the socket backwards. If the cheeks are short without great breadth, similar grooves in the mandibles and in the cheeks, in infinite variation, constantly occur. Finally, in those which are destined for digging under ground (*Scaritini, Acinopus, Broscus*, &c.), or for living under bark (*Silphomorpha*), or other similar modes of existence (*Hiletus*), the cheeks are short, but extend considerably downwards (owing to

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Leconte's classification often becomes because of his blind adherence to the mere differences of shape exhibited by these pieces. Prof. Schjödte further refutes his erroneous statement that *Brachinini* alone have seven abdominal joints, but all other *Carabi* six; the seventh joint is found in all *Carabi*, only in many it is retracted under the sixth (*vide* also Denm. Eleutherata, 361, and Germar, Zeitschrift f. Entomologie, v. 476).

the thickness of the head), the bases of the antennæ are often protected by the prominent corners of the forehead, the antennæ geniculated, and two foveæ antennales provided. Taking all this into consideration, Prof. Schjödte has, in the 'Proceedings of the Royal Society of Copenhagen' (*loc. cit.*), proposed the following distribution of *Carabi*:—

I. EPIMERA MESOTHORACICA COXAS INFERIUS ATTINGENTIA.

A. *Epimera metathoracica appendice exteriori nulla.*
  1. Antennæ frontales.
    1. Cicindelini.
  2. Antennæ pone mandibulas genis insertæ.
    a. Antennæ scrobiculis haud recipiendæ, basi detectæ.
      2. Carabini (inclus. Elaphrini cum gen. *Loricera*, Latr., et *Migadops*, Wath.).
    b. Antennæ scrobiculis recipiendæ, sæpissime fractæ.
      * Antennæ basi detectæ. Tibiæ inermes (mentum concretum; epimera mesothoracica concreta).
      3. Siagonini (*Siagona*, *Enceladus*).
      ** Antennæ basi lamina frontali supertectæ. Tibiæ anticæ palmatæ.
      4. Scaritini.

B. *Epimera metathoracica appendice exteriori instructa.*
  a. Antennæ basi lamina frontali supertectæ, scrobiculis recipiendæ. Tibiæ anticæ integræ.
    5. Hiletini (type *Hiletus*, Naturh. Tidsskr. *l. c.*).
  b. Antennæ basi detectæ, scrobiculis haud recipiendæ. Tibiæ anticæ emarginatæ.
    6. Ozænini (types *Ozæna*, *Myrtropomus*, *Mormolyce*).

II. EPIMERA MESOTHORACICA COXAS INFERIUS HAUD ATTINGENTIA.
  Tribus Caraborum ceteræ.

It is to be hoped that Prof. Schjödte will find an opportunity for carrying out in greater detail these new ideas, which certainly seem to promise very useful systematic results.

To return to the volume before us: it should be noticed that it contains four excellent plates illustrating a paper by the editor on the metamorphoses of Coleoptera, with drawings and analyses of the larvæ of *Gyrinus marinus*, *Hydroüs aterrimus*, *Hydrophilus caraboïdes*, *Hydrobius fuscipes*, *Philhydrus testaceus*, and *Berosus spinosus*. In the following part this treatise will be continued, and we shall then have an opportunity for a few observations on it.

The North-Atlantic Sea-bed; comprising a Diary of the Voyage on board H.M.S. Bulldog, in 1860, *and Observations on the Presence of Animal Life, and the Formation and Nature of Organic Deposits, at great Depths in the Ocean.* By G. C. WALLICH, M.D., F.L.S., F.G.S. &c. Part I. 4to. London: Van Voorst, 1862.

In this work Dr. Wallich, who held the office of Naturalist to the Expedition dispatched in 1860 to survey the proposed telegraphic route between this country and America, gives us the results of his investigations into the natural history of the portion of the sea-bed